$$D = .7185\,t + .486\,t^2\,(10^{-2}) + .96\,t^3\,(10^{-5}),$$

the logarithmic coefficients being

$$\log A = 9.856448 - 10,$$
$$\log B = 7.687127 - 10,$$
$$\log C = 4.984735 - 10.$$

From the above the relative ratio of air radiation per degree at different temperatures may be found.

For $t = 1°$, we have $dD/dt = 0.728$.

For $t = 100°$, we have $dD/dt = 1.98$.

Hence the radiation per degree at 100° is $1.98/0.728 = 2.72$ times greater than at 1°.

There remains before computing the value of the radiation constant to find the temperature gradient of the hot air column in the line of sight; laterally, the central portion of the air column only was used, and no correction in that direction is required. A thermal junction of thin copper and iron wires was moved by steps through the heated air column, and the readings of a galvanometer, through which the junction was connected, noted. The edge of the opening in the air chimney being called 0, its center would be at 5. The following readings were obtained:

TABLE 7.

Distance.	Deflection.
5.0	155
4.0	155
3.0	155
2.0	155
1.0	149
0.5	124
0.2	105
0.0	90
—0.2	75
—0.5	50
—1.0	22

The air flowing up past the outside of the warmed box gave the deflections for negative values of distance; the integral of these was nearly sufficient to balance the loss for less temperature within the range of positive values of the distance. By plotting a curve and integrating the positive and negative values with reference to distance, and radiation rate as derived from fig. 3, we find the actual air column to be 0.967 as effective as a column 10 centimeters deep, and at a temperature measured at its center.

We are now prepared to calculate the radiation constant, h. Assume that this is wanted for an excess temperature of 100°, a depth of 1 centimeter, and zero absorbing column. We have:

Average of all excess air temperatures observed = 122°
Deflection for 122° from fig. 3 = 179
Deflection for 100° from fig. 3 = 130
Radiation per degree from lampblack at 4° excess; average = .000249 (McFarlane.)
Ratio of air to lampblack radiation for zero absorbing column, from fig. 2 = .041

Therefore, $h = (130/179)\,(.000249)\,(0.1)\,(.041)\,(0.967)$
$= 0.000000717$ water-gram-degrees per square centimeter per second per degree excess temperature.

For 1° this becomes 0.000000264, and may be found with great facility from the curves given, or from their equations, for any temperature or depth of absorbing column within the limits of our observations.

If our surmise be correct that the freely transmitted part of moist air radiation is from its contained water vapor, amounting to 40 per cent of the whole, then the above numbers would become for dry air, 0.00000043 and 0.00000016, respectively.

NOTES AND EXTRACTS.

OBSERVATIONS AT TASIUSAK.

The Danish Government has recently published the record of meteorological, magnetic, and auroral observations made at Tasiusak, in the district of Angmagsalik, during the years 1898–99. This district was first explored and charted in 1884–85 by G. Holm, who found there a hitherto unknown tribe of Esquimaux. Consequently, in 1894, the Danish Government established here a commercial station and a mission. The station at Tasiusak is on the southwest shore of a small fiord on the southern coast of the island of Angmagsalik. The terminal moraines of great glaciers approach within 20 miles on the northwest and 50 miles on the north. The Atlantic Ocean occupies a semicircle of the horizon from northeast to southwest. An arctic current flows between Tasiusak and Iceland, whose nearest point is 300 miles to the eastward. The latitude of the station is 65° 36′ 40″ north, longitude 37° 33′ 26″ west of Greenwich. The cistern of the mercurial barometer is 17.3 meters above mean sea level. The records of the Richard self-recording instruments are published for each hour of the day, in full from November 1, 1898 to May 17, 1899. But observations in general are at hand for seven years during the interval 1883–1900, or whenever scientific expeditions have remained at that place. Some of the more remarkable meteorological measurements at the station are elucidated in this report by means of charts of the barometric regions over the North Atlantic Ocean. During seven years it was very rare to find a month where the maximum temperature did not rise above that of melting ice. Even in January and February, although the minimum temperatures are 28°, 29°, or 30° below zero on the centigrade scale, yet the maxima are 3°, 4°, or 5° above; that is to say, from 37° to 41° Fahrenheit. The relative humidity of the air falls as low as 11 per cent in September and November, but in other months it ranges between 25 and 46. From November to February the wind blows from the northern portion. In April and May the most frequent winds are south and west, but calms are still more frequent, amounting to from 40 to 50 per cent in November and February. The greatest velocity of the wind, measured by the Robinson anemometer, occurred during the storm of November 25–26, 1898, and amounted to 47.4 meters per second, or 95 miles per hour. At that time a center of low pressure was moving eastward, just to the north of Tasiusak and over Iceland. In general the centers of low pressure passed to the west of Stykkisholm, on the west coast of Iceland, twenty-two times during the winter of 1898–99, but to the south of Stykkisholm eighteen times. Those that pass to the west undoubtedly pass near Tasiusak. Elaborate descriptions are given of the aurora borealis, and the statistics show that the station is located in the northern part of the zone of maximum frequency, or even entirely north of this zone, which traverses Greenland at the sixty-first degree of latitude, and then passes between Iceland and Greenland, probably over the island of Jan Mayen and continues on between the northern part of Norway and the island of Spitzbergen.—*C. A.*

CLIMATOLOGY OF BALTIMORE, MD.

For some years past Dr. O. L. Fassig has been compiling a work on the climatology of Baltimore and its vicinity. This report will form volume 2 of the reports of the Maryland State Weather Service, and is already in press. Progress toward the completion of the report has been delayed, owing to the fact that almost all the work must be done outside office hours, that is to say, at night time. Unfortunately, on two occasions, fire has destroyed many finished plates, but nearly all the numerical calculations have been completed, and a final draft of the outline of the report can be submitted. The complete